margins straight, subparallel. End margins curved, greatest curvature of anterior margin lower than that of posterior. Lateral surface reticulated, marginal areas and dorsum nonreticulated. Oval "kirkbyan pit" located anterior to midlength and slightly below midheight. Hingement incised, amphidont, consists of an accommodation groove in the smaller valve terminated by rounded, tenonlike teeth that are bounded by sockets that open to the outside. The dorsal edge of the overlapping valve terminated by accommodating mortiselike sockets that are open dorsally; these are flanked by terminal teeth that consist of an enlargement of the overlapping portion of the larger valve. The overlapping valve has a groove along the marginal area to receive the bevelled edge of the smaller valve. This grooved zone is offset from the valve surface, resulting in a rimlike pleat on the outside of the valve. The smaller valve has a narrow bevelled edge bordered by a thin strip that seals the closing valves. A very narrow duplicature is suggested in many specimens by a thin zone that borders the inside of the overlapping structures of both valves. Dorsal and ventral outlines subovate, greatest convexity just in front of muscle scar pit.

Cyathus vetustus Cooper, 1941, resembles this species in outline; it differs in the hingement and in the absence of a subcentral muscle scar pit, and it is devoid of reticulations.

The preservation of many of the specimens does not show the reticulation (Figs. 5–12), but the presence of specimens with patches of the reticulations abraded (Fig. 1) indicates that the smooth forms having the characteristic outlines and hingement are conspecific with the reticulated forms.

Measurements	*Greatest length (mm)*
Holotype, Figs. 3, 4, U.S.N.M. 118307	0.81
Paratype, Figs. 1, 2, U.S.N.M. 118306	0.86
Paratype, Figs. 5, 6, U.S.N.M. 118308	1.27
Paratype, Fig. 8, U.S.N.M. 118309	0.93
Paratype, Fig. 11, U.S.N.M. 118309	0.98

Type locality.—U.S.G.S. 10889 Helms formation, El Paso quadrangle, Tex., 2½ miles west of Powwow Tanks, approximately 30° 50′ 17″ N., 106° 04′ 40″ W. Stop 13, West Texas Geol. Soc. Guidebook, Field Trip 5, 1949, and limestone bed 9, sec. "C" West Texas Geol. Soc. Field Trip May–June 1946 (stop 1 on map accompanying that trip). Coll. C. C. Branson, November 1949, A. L. Bowsher, 1948 (U.S.N.M. locality 3070-2).

Distribution.—This species is abundant also in bed 11 of the same section (U.S.N.M. locality 3070-4), and at approximately the same stratigraphic level in a saddle 1.1 miles west of Powwow Tanks, approximately 31° 50′ 16″ N., 106° 02′ 55″ W. (U.S.N.M. locality 3069-2).

REFERENCES

Cooper, C. L. *Chester ostracodes of Illinois*. Illinois Geol. Surv. Rep. Investigations No. 77: 101 pp., 13 pls. 1941.

Levinson, S. A. *The hingement of Paleozoic Ostracoda and its bearing on orientation*. Journ. Pal. **24**: 63–75, 16 figs. 1950.

Sohn, I. G., *Comparison of etched silicified ostracodes from limestone with calcareous forms from subjacent shale*. Bull. Geol. Soc. Amer. **61** (12): pt. 2, 1504 (abs.). 1950.

Spizharsky, T. N. *Ostracoda from the Kolchugino series of the coal-bearing strata of the Kuznetsk Basin*. Trans. Central Geol. and Prosp. Inst., fasc. **97**: 139–171 (Russ., Engl. Summ.), 2 figs., 1 pl. 1937.

Triebel, Erich. *Homöomorphe Ostracoden-Gattungen*. Senckenbergiana **31**: 313–330. 1950.

BOTANY.—*Some new combinations in Guatemalan Bromeliaceae.* Lyman B. Smith, Department of Botany, U. S. National Museum.

The following new combinations are necessary preliminary to the publication of the Bromeliaceae in a projected part of the Flora of Guatemala by Standley and Steyermark.

Tillandsia elongata H. B. K. var. **subimbricata** (Baker) L. B. Smith, comb. nov.

Tillandsia subimbricata Baker, Journ. Bot. **25**: 304. 1887.

In 1889 André (Brom. Andr. 96) indicated that he did not consider *Tillandsia subimbricata* specifically distinct from *T. elongata*, although he failed to make any combination for it. Subsequent collections have shown a series of intergradations that amply justify André's opinion.

Tillandsia tricolor Schlecht. & Cham. var. **melanocrater** (L. B. Smith) L. B. Smith, comb. nov.

Tillandsia melanopus E. Morr. ex Mez. in DC. Monogr. Phan. **9**: 680. 1896, in large part but not as to type.

Tillandsia melanocrater L. B. Smith, Contr. Gray Herb. **117**: 31. 1937.

When first proposed on the basis of a few collections this taxon seemed easily distinguishable from *Tillandsia tricolor*. However, recent collections from Guatemala break down all distinctions except the highly artificial one of size. It seems best, therefore, to regard *T. melanopus* as a Central American variety of the Mexican *T. tricolor*.

Vriesia montana (L. B. Smith) L. B. Smith & Pittendrigh, comb. nov.
Thecophyllum montanum L. B. Smith in Yuncker, Field Mus. Publ. Bot. **17**: 319. 1938.

The validity of the genus *Thecophyllum* will be discussed in detail in a later paper by Dr. C. S. Pittendrigh and myself, but the above combination must be made now.

ENTOMOLOGY.—*Studies in Panama* Culicoides (*Diptera: Heleidae*): I, *Descriptions of six new species.*[1] Willis W. Wirth[2] and Franklin S. Blanton.[3] (Communicated by Curtis W. Sabrosky.)

This paper is the first of a short series to bring up to date our taxonomic knowledge of the Panama species of biting midges of the genus *Culicoides* Latreille. In 1951 the junior author began a comprehensive survey of the biting Diptera of Panama. It soon became apparent that the large numbers of both male and female *Culicoides* which were collected in the traps in use for this survey would afford an unexcelled opportunity for a taxonomic study. The senior author, with a great taxonomic interest in the Heleidae, and advantageously located at the U. S. National Museum, where the types of a number of Neotropical species of *Culicoides* are located, was therefore invited to join in a cooperative study.

Our efforts were greatly stimulated by the recent appearance of several important papers on the Caribbean biting midges of this genus, including papers by Barbosa (1947), Fox (1946, 1947), Macfie (1948), and Ortiz (1950, 1951). All these authors have presented keys for the identification of the Caribbean species. With the great amount of descriptive work concurrently going on, however, keys are out of date almost as soon as published. Nevertheless, they are invaluable as working tools, and in a later paper of this series we will present a key to the Panama species.

Our terminology is the same as that employed by Wirth (1952), where a more complete description of terms can be found. The most important difference between our usage and that of some other *Culicoides* workers is in our designation of the wing veins and corresponding cells according to Tillyard's modification of the Comstock-Needham system; thus veins Cu_1 and Cu_2 of older workers become M_{3+4} and Cu_1, respectively, and cell Cu_1 becomes cell M_4 (labeled in Fig. 2). Length is measured in relaxed specimens from the anterior edge of the mesonotum to the tip of the abdomen; a more reliable measurement is the wing length, which along with the costal ratio is measured from the basal arculus. Body measurements, antennal and palpal proportions, and descriptions of male genitalia are obtained from specimens cleared in pure phenol and mounted on slides in phenol-balsam mixture after gradual infiltration. By this method dried specimens can be relaxed and cleared, and the refractive index of the phenol-balsam brings out the minute details of the antennal and palpal sensoria, the female spermathecae, and the internal structures of the male genitalia. In the following descriptions no special mention is made of the rudimentary third spermatheca and sclerotized ring of the female internal reproductive organs, as they are present in all Neotropical species that we have studied.

To our knowledge Ortiz (1951) was the first to show the presence of the dense tufts of short, curved setae around the margins of disciform, hyaline sensoria at the apices of certain antennal segments. We have made a comparative study of them in our species with very promising results. These tufts are always present on the third (first flagellar)

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